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MEMOIRS OF THE DEPARTMENT OF AGRICULTURE IN INDIA

LIFE-HISTORIES OF INDIAN INSECTS MICROLEPIDOPTERA

IX. APPENDIX.

BY

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PREFACE

SINCE sending to press parts 1–8 of this volume a few additional life-histories have been worked out at Pusa. Mr. W. M. Maxwell, I.C.S., has also kindly sent me some notes on various species reared by him in Bombay, and Mrs. Drake has forwarded notes on a new species of *Antispila* from Serampore. The opportunity is taken to add these supplementary notes to the present volume in order to have all our information under one cover.

Pusa, 5th April 1920. T. BAINBRIGGE FLETCHER.

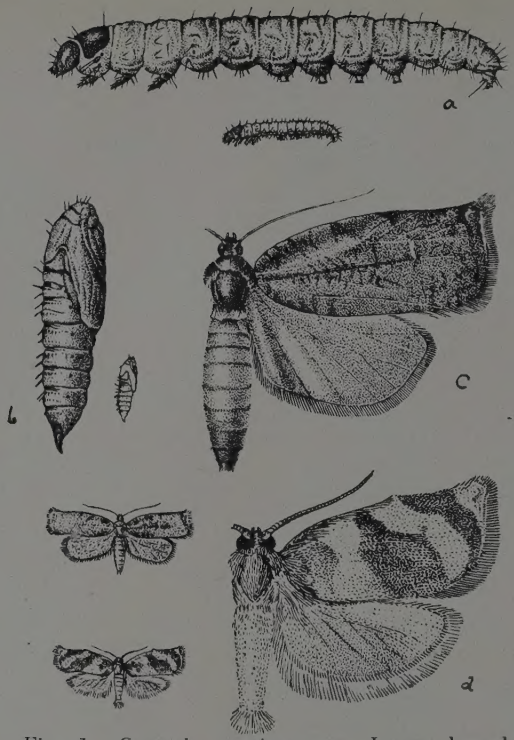

Fig. 1. *Cacoecia pomivora*:—*a*, Larva, lateral view (x 4) ; *b*, pupa, lateral view (x 4) ; *c*, female moth (x 4) ; *d*, male moth (x 4). The smaller figures show the natural sizes.

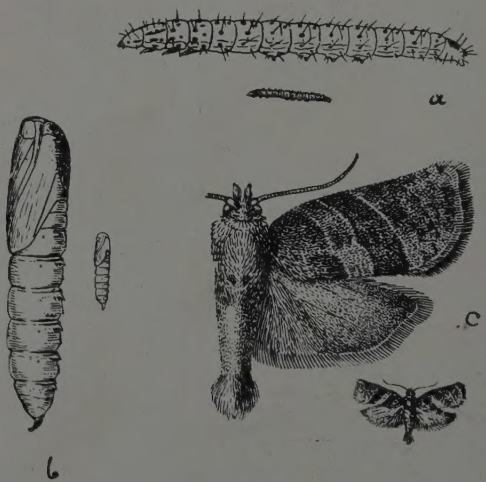

Fig. 2. *Ulodemis trigrapha*:—*a*, Larva, lateral view (x 4) ; *b*, pupa, lateral view (x 4) ; *c*, moth (x 4). The smaller figures show the natural sizes.

LIFE-HISTORIES OF INDIAN INSECTS. MICROLEPIDOPTERA.

IX. APPENDIX.

BY

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[Received for publication on 24th April 1920.]

TORTRICIDÆ.

ADOXOPHYES MODERATANA, WLK.

Tortrix moderatana, Wlk., Cat., XXVIII, 328-329 (1863)(1).
Adoxophyes moderatana, Meyr., Cat. Tortric., p. 14 (1912)(2).

Walker originally described this species from Sarawak,(1) but perhaps in error, as Meyrick(2) only records it from India. We have it from Pollibetta in South Coorg.

Bred on 3rd January 1912 [at Karwar] from larva found in spun leaves of *Simplocos spicata*. (*Maxwell.*)

CACŒCIA POMIVORA, MEYR. MS. (PLATE LVIII, FIG. 1.)

This species seems to be a local pest of apple at Ramgarh, Kumaon District, the larva generally boring into the fruit from the apical end and driving a gallery right through the core, this gallery being widened laterally into the fruit itself which ultimately begins to rot. The external end of the gallery is closed with silken threads intermixed with frass. Only one larva is found in each affected fruit. Examples of affected apples were received on 15th September 1919, through the kindness of Mr. Johnson, of Apple Garth Orchard, Ramgarh, and from the material sent moths were reared out at Pusa, between 20th September and 13th October.

The full-grown larva (Plate LVIII, fig. 1*a*) is about 18 mm. long and 2 mm. broad across mid-body, tapering slightly towards either extremity, yellowish-green or pale-yellow; head black, glossy, flattened; prothoracic shield large, black, medially divided; other segments with a couple of elongated black spots and a round, white-centred, black spot on each side; first two pairs of legs black, the metathoracic leg yellowish-brown, black apically; five pairs of slender, equally-developed prolegs concolorous with the body.

When full-fed, the larva leaves the fruit and pupates in a very thin cocoon built in any convenient crevice. The pupa (Plate LVIII, fig. 1*b*) is about 10 mm. long, tapering prominently posteriorly, brown; the second and third abdominal segments with a deep dorsal groove on their anterior margins; the succeeding segments up to the eighth have each a dark ridge in the same situation; the second to eighth abdominal segments with a double, dorsal, transverse row of posteriorly-directed spines; dorsal margin of anal segment protruded into a long cremaster provided with four recurved spines apically and two similar spines on each side, these circinate spines being entangled in the silken fibres of the cocoon. The pupal period was about eight days at Pusa. (Pusa Insectary Cage-slip 1918.)

ULODEMIS TRIGRAPHA, MEYR. (*ante*, page 40.) (PLATE LVIII, FIG. 2.)

This species was reared from a larva found boring into an apple fruit at Shillong in September 1919. The larva eats in at the flower-scar and bores a tunnel into the centre of the fruit and feeds on it. In the single case noted the larva did not penetrate into the pulp of the fruit. When full-fed, the larva emerges from the fruit and pupates in any convenient crevice. Although only a single specimen was noted, this larva is stated to be not uncommon as a borer in apple fruits at Shillong. Apparently the same species was also reared at Shillong from a larva found feeding in spun-up flowers of *Colquhounia coccinea*, webbing up the bunches of buds and flowers and eating into the sides of the flower-tubes. The larva was described as about 14 mm. long, elongated, moderately slender, whitish-green; head yellowish, with yellowish-brown markings laterally; prothoracic shield large, pale greenish-yellow edged laterally with black; legs black, rather large; prolegs (four pairs and anal claspers) rather short, whitish-green; each segment with two dorso-lateral black tubercles, on same level, conspicuous, and large perpendicular black tubercle and others (less conspicuous) below this; the tubercles emit longish white hairs. The moth from this larva emerged on 2nd October 1919.

Ancylis lutescens:—

a, Top-shoot of *Zizyphus*, showing leaves rolled and twisted by larvæ.
b, Larva, natural size and magnified (x 3½).
c, Pupa, do. do. do. do.
d, Moth, do. do. do. do.

PERONEA AGRIOMA, MEYR. MS.

Reared at Shillong in July 1918 from larva on apple. Also feeds commonly on rose at Shillong.

EUCOSMIDÆ.

ACROCLITA VIGESCENS, MEYR. (*ante*, page 44.)

This species has again been reared at Pusa from larvæ found on 2nd December 1919, on *Cordia myxa*, tying the leaves one above another, living inside, and nibbling the green tissue from the surface of the leaves.

The larva is about 10 mm. long and about 1·5 mm. across the thoracic region, rather flattened and tapering posteriorly, skin soft and rather transparent pale-yellow tinged with greenish due to abdominal contents; head rather flattened, brownish-yellow, glossy; prothorax covered with a large, glossy, brown to dark-brown shield; hairs rather short, white; spiracles minute, yellow; legs and five pairs of equally-developed prolegs pale-yellow.

Pupation takes place between the leaves in a white silken cocoon covered with black pellets of frass. The pupa is about 4·5 mm. long and 1·25 mm. across thoracic region, tapering in either direction, brown-yellow; second and following abdominal segments with an anterior dorsal transverse row of small posteriorly-directed spines; anal segment rounded posteriorly and with the transverse row of spines on its dorsal margin. The pupa wriggles out of the cocoon to some extent before the moth emerges. Moths emerged between 5th January and 3rd February 1920. (Pusa Insectary Cage-slip 1973.)

ANCYLIS GLYCYPHAGA, MEYR. (*ante*, page 45.)

Bred in January 1915 from larvæ found amongst spun leaves of *Zizyphus rotundifolia*, feeding on the lower surface ot the leaf, apparently when young mining under the cuticle. Larva with head small, pale-brownish, much porrected and shiny; body with segments strongly marked, pale greenish-ochreous, with scattered short bristles. (*Maxwell.*)

The above record renders it probable that the larvæ reared at Pusa were actually feeding on *Zizyphus* leaves and not on the sugary excretion of *Phromnia*.

ANCYLIS LUTESCENS, MEYR. (*ante*, page 45.) (PLATE LIX.)

This has again been reared at Pusa from larvæ collected on 27th September 1919, rolling and eating top-shoots of *Zizyphus jujuba*, and the opportunity has been taken to add figures of the various stages which have been already described. (Pusa Insectary Cage-slip 1947.)

POLYCHROSIS ACANTHIS, MEYR. MS. (PLATE LX

Larvæ were found at Pusa on 26th November 1919, boring in stems of *Justicia gendarussa*. The larva bores at the top of the stem, which it usually enters at the axils of the leaves or branches, causing the top-shoot to wither. (Plate LX, fig. *a*.) The bored shoot breaks very easily at the place where the larva enters it. The larval tunnel usually runs along the axis of the stem, but may extend across it. Pupation takes place inside the bored stem in which the larva prepares a hole of exit for the future moth, the pupa wriggling out of the stem to some extent before the moth emerges.

The full-grown larva (Plate LX, fig. *b*) is about 8 to 10 mm. long, sub-cylindrical, moderately stout, tapering very slightly posteriorly, pale-yellow slightly tinged with green ; head large, shiny, dark-brown, almost black ; prothoracic shield concolorous with head ; legs pale-yellow tinged with grey ; five pairs of equally-developed short prolegs concolorous with body.

The pupa (Plate LX, fig. *c*) is about 4·5 mm. long, yellow ; head with a small anterior snout-like process ; abdominal segments anteriorly with a transverse dorsal row of posteriorly-directed spines and posteriorly with a similar but rather indistinct row of much smaller spines ; anal extremity rather rounded and provided with a few circinate hairs.

Moths (Plate LX, fig. *d*) emerged on 8th and 15th December 1919. (Pusa Insectary Cage-slip 1965.)

LOBESIA AEOLOPA, MEYR. (*ante*, page 54.) (PLATE LXI, FIG. 1.)

This has also been reared at Pusa from larvæ collected on 11th September 1919 living and feeding in the calyces of flowers of *gumma* (*Leucas carata*). The larva (Plate LXI, fig. 1 *a*) is about 8 mm. long and 1 mm. across the middle, tapering slightly posteriorly, green with a yellowish tinge ; head shiny black ; prothoracic shield black, divided medially ; prothoracic legs black, others greenish-yellow.

Pupation takes place within a thinly-built cocoon hidden amongst the calyx of the flower or sometimes placed inside a tubular floret. The pupa (Plate LXI, fig. 1*b*) is about 4·5 mm. long and 1·5 across mid-body, dark rown with a greenish tinge. The moth (Plate LXI, fig. 1*c*) emerges after a pupal period of about seven days. (Pusa Insectary Cage-slip 1916.)

ARGYROPLOCE APROBOLA, MEYR. (*ante*, page 57.)

This has since been reared at Pusa from larvæ found on 16th October 1919, hiding among rose-petals and feeding on them ; as the larvæ spin silk the petals do not fall off although they are cut basally. The larvæ are sensitive

Polychrosis acanthis:—

a, stem of *Justicia gendarussa* bored by larva, showing withered top-shoot.
b, Larva, natural size and magnified (x 7).
c, Pupa, do. do. do. do.
d, Moth, do. do. do. do.

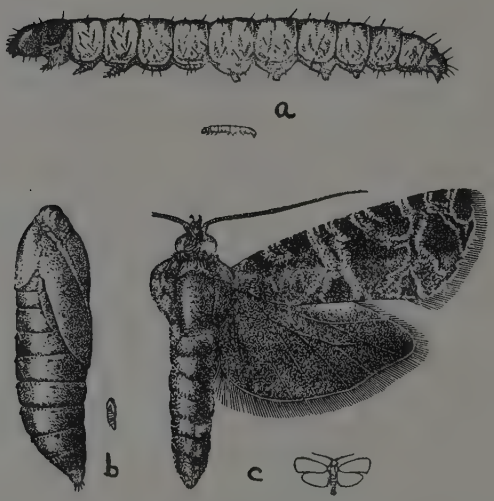


Fig. 1. *Lobesia aeolopa*:—*a*, Larva ; *b*, pupa ; *c*, moth (female) ; natural sizes and magnified (x 8).

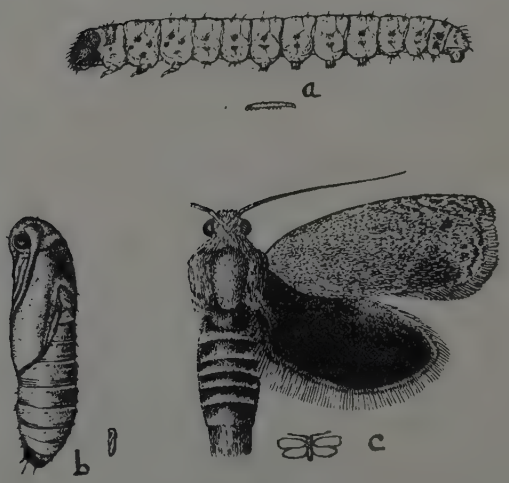


Fig. 2. *Laspeyresia perfricta*:—*a*, Larva ; *b*, pupa ; *c*, moth, natural sizes and magnified (x 8).

and jump when touched. The full-grown larva is about 20 mm. long and 2·5 mm. across the middle, tapering towards either end, flattened, pale-yellow of different shades in individual larvæ according to size and amount of food ingested, but the dorsal vessel is clearly visible in all; head flattened, glossy brown (very dark in young larvæ); prothoracic shield large, dark-brown, rather dull, and with a faint dorsal line (in young larvæ concolorous with head); first two pairs of legs dark, the third pair and five pairs of short equally-developed prolegs concolorous with the body.

Pupation takes place within rolled petals which have been lined with silk. The pupa is from 7 to 10 mm. long, cylindrical, tapering towards either extremity, brown varied with darker; abdominal segments with double dorsal rows of posteriorly-directed spines; anal segment with a number of circinate hairs which remain entangled in the fibres of the cocoon.

From these larvæ moths emerged between 29th October and 3rd November. (Pusa Insectary Cage-slip 1936.)

LASPEYRESIA CAPPARIDANA, Z. (*ante*, page 63.)

This has also been reared at Pusa from larvæ collected on 4th September 1919 feeding in top-shoots of *bagnahi* (*Capparis* sp.). These larvæ commenced to pupate on 7th September, and moths emerged between 13th and 19th September. (Pusa Insectary Cage-slip 1924.)

The specimens reared from these larvæ are very small and dark; Mr. Meyrick remarks (*in litt.*) that the species appears to vary climatically or seasonally, perhaps also by feeding on different species of *Capparis*.

LASPEYRESIA PERFRICTA, MEYR. MS. (PLATE LXI, FIG. 2.)

Larvæ were collected at Pusa on 3rd and 31st August 1919, boring into shoots of *Pongamia glabra*. The larva (Plate LXI, fig. 2*a*) is rather over 8 mm. long and 1·25 broad, pale-yellow; head brown; prothoracic shield small, light-brown, medially divided. Pupation generally takes place in a thinly built cocoon formed inside the stem within the larval tunnel. The pupa (Plate LXI, fig. 2*b*) is rather less than 5 mm. long and rather more than 1 mm. broad, yellowish-brown. From larvæ which pupated on 9th September, moths (Plate LXI, fig. 2*c*) emerged on 17th and 18th September. Moths have also been reared out in December. (Pusa Insectary Cage-slip 1914.)

PAMMENE QUERCIVORA, MEYR. MS.

Bred at Shillong on 3rd July 1918 by Y. Ramachandra Rao from larvæ feeding on leaves of *Quercus griffithii*.

GELECHIADÆ.

STEGASTA VARIANA, MEYR. (*ante*, page 83.) (PLATE LXII, FIG. 1.

This species has been reared again at Pusa from larvæ found on 26th November 1919 feeding between spun leaves of *chakaur* (*Cassia* sp.). The larva binds one leaf over another (Plate LXII, fig. 1*a*), lives between them and nibbles the green tissue.

The full-grown larva (Plate LXII, fig. 1*b*) is about 8 mm. long and 1·25 mm. broad, subcylindrical, tapering at either extremity ; head smaller than prothorax, shiny black ; prothorax scarlet with a glossy black or dark-brown shield ; mesothorax scarlet ; other segments pale greenish-yellow tinged with pink ; hairs pale-yellow, arising from small black points ; spiracles small, round, with a black rim enclosing a clear space ; legs black, shiny ; five pairs of equally-developed pale-yellow prolegs.

Pupation takes place between the spun leaves in a small white silken cocoon, the empty pupa-case being left in the cocoon on emergence of the moth.

The pupa (Plate LXII, fig. 1*c*) is about 4 mm. long and 1·3 mm. broad across thoracic region, tapering prominently posteriorly, brownish-yellow, the hinder end rounded and provided with a few radiating fine hairs. From larvæ which pupated about 1st–2nd December, moths emerged between 22nd December 1919 and 10th January 1920. (Pusa Insectary Cage-slip 1969.)

LECITHOCERA EFFERA, MEYR. (PLATE LXII, FIG. 2.)

Two larvæ were found at Pusa, on 5th November 1919, rolling and eating the leaves of *Ipomœa reptans*. Of these one was parasitized but the other pupated on 20th November, and emerged as a moth on 28th November. A few more larvæ were obtained on 26th November, and emerged between 18th December and 14th January 1920.

The larva (Plate LXII, figs. 2*b*, *c*) is about 12 mm. long and 1·5 mm. across the middle of the body which is slightly flattened and tapers towards either extremity ; head red-brown, glossy, flattened ; prothorax covered with a large blackish-brown shield ; the intersegmental region between prothorax and mesothorax with a white collar-like band interrupted mid-dorsally ; between mesothorax and metathorax there is a white band ; mesothorax, metathorax and first two abdominal segments velvety black; other segments yellowish-white marked on third, fourth, sixth and seventh abdominal segments with a velvety black band which passes over the anterior part of the segment and goes down obliquely posteriorly on each side, and on the posterior part

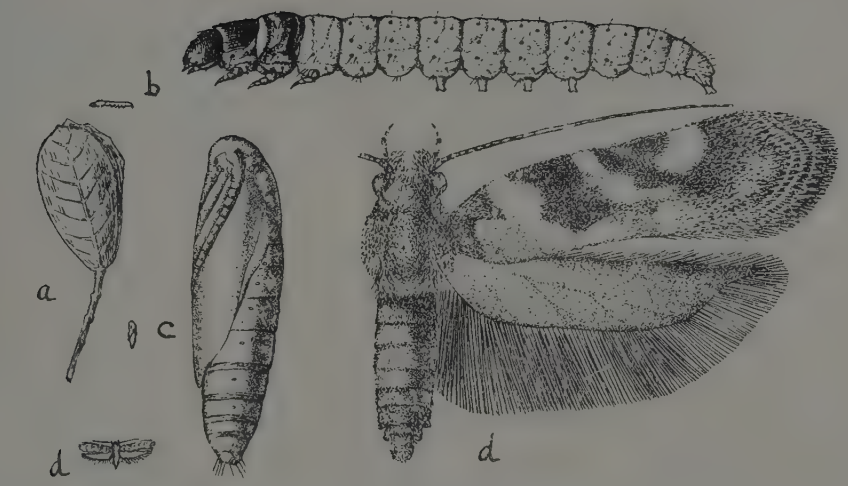


Fig. 1. *Stegasta variana*:—*a*, Leaves spun together by larva ; *b*, larva ; *c*, pupa ; *d*, moth ; natural sizes and magnified (x 12).

Fig. 2. *Lecithocera effera*:—
a, Leaf rolled and eaten by larva;
b, Larva, about ¾ grown, natural size and magnified (x 7) ;
c, Larva, full-grown, magnified (x 7) ;
d, Pupa, natural size and magnified (dorsal and lateral views) (x 7) ;
e, Moth, natural size and magnified (x 7).

of these segments there is also a transverse black bar almost touching the arms of the band ; on the fifth abdominal segment also there is a similar band but dorsally it is obscured by a large velvety black patch ; on eighth and ninth abdominal segments there is a large black anterior dorsal patch, that on eighth segment tending to form an oblique band, and posteriorly there is also a small black dorsal patch ; tenth abdominal segment with a small black dorsal patch ; legs black, shiny ; five pairs of equally-developed pale-yellow prolegs.

Pupation takes place inside a leaf rolled longitudinally. (Pusa Insectary Cage-slip 1962.)

HELCYSTOGRAMMA LAMPROSTOMA, ZELL.

Gelechia lamprostoma, Zell., Isis, 1847, 851-852(1).
Gelechia zulu, Wlsm., T. E. S. 1881, 261-262, t. 12, f. 30 (1881)(2).
Anacampsis lamprostoma, Wlsm., T. E. S. 1891, 94-95 (1891)(3) ; Stdgr.—Rebel, Cat. Lep. Pal. II, 154, No. 2848 (1901)(4) ; Snell., Tijds. voor Ent. 1901, 88 (1901)(5) ; Spuler, Schmett. Europ. II, 374 (1910)(6).
Strobisia lamprostoma, Meyr., B. J., XX, 732 (1911)(7).

Originally described from Sicily by Zeller(1), this species has since been recorded from Spain(3), Asia Minor(3), Gambia(3), Natal(2, 3), and Java(5), and, within our limits, from India(3) and Yala, in South-East Ceylon(7).

It has been reared at Pusa in November 1919 from a larva rolling a leaf of *Ipomœa reptans* and in December 1919 from a larva rolling leaves of sweet-potato.

TRICHOTAPHE PLUTELLIFORMIS, SNELL.

Ceratophora plutelliformis, Snell., Tijds. voor Ent., XLIV, 84, t. 6, f. 4(1).
Trichotaphe plutelliformis, Meyr., B. J., XXII, 180 (1913)(2).

Originally described from Java(1, 2) this species has since been recorded from Australia(2), Ceylon (Puttalam)(2), and North Coorg.(2)

This species was reared at Pusa from larvæ collected on 3rd and 14th November 1919, on leaves of *Ipomœa reptans*. The larva folds the two blades of the leaf together, fastening the margins with silk. It is about 7 mm. long, skin soft and uniform pale-yellow ; hairs black, arising from black points ; spiracles small, round, light-brown with a narrow dark rim ; head large, black, glossy ; prothorax entirely covered by a black, glossy shield ; legs and five pairs of equally-developed prolegs concolorous with the body. Pupation takes place within a rolled leaf. Moths emerged between 19th November 1919 and 13th January 1920. (Pusa Insectary Cage-slip 1955.)

TRICHOTAPHE PSEUDOMETRA, MEYR.

Trichotaphe pseudometra, Meyr., B. J., XXII, 179 (1913)(1).

Bred [at Karwar?] on 31st August 1913 from larva found between spun leaves, and which pupated on 24th August. (*Maxwell.*)

Originally described from North Coorg(1).

ŒCOPHORIDÆ.

PICROTECHNA OPHIODORA, MEYR.

Picrotechna ophiodora, Meyr., Exot. Micr., I, 260 (1914)(1).

Described from the Khasi Hills(1).

Bred [at Karwar ?] from numerous larvæ, each living separately but so crowded as to be almost gregarious, on an unidentified shrub which was described as an erect woody jungle plant with deeply 5-palmate reticulately veined leaves with acuminate lobes, 7-nerved, alternately whorled on stem with long petioles. Each larva lives under a white web situated on one of the main nerves on either the upper surface or the under-side of the leaf. The central portion of the web is so tightly spun as to be opaque, concealing the larva. Under each web there is a round hole of escape to the other side of the leaf, and the larva emerges and feeds on both sides of the leaf, moving actively. The larva is opaque creamy to greenish, dorsal area often darker, body tapering considerably posteriorly, segments strongly marked, with rather long whitish hairs distributed as usual; head large, greenish, with red-fuscous cheeks; prothoracic plate centrally greenish, laterally red-fuscous; anal claspers prostrate. The pupa is altogether external, attached by the tail only, and lies prostrate on the under-side of the leaf; in shape it is very like that of *Tonica*; in colour pale-brown with darker-brown points and markings. Larvæ collected at Christmas 1914, emerged on 14th January 1915. (*Maxwell.*)

PORTHMOLOGA PARACLINA, MEYR. (*ante*, page 109.)

Bred in February 1916 from a pupa found on *Zizyphus rotundifolia*. The pupa was similar to that of *Picrotechna ophiodora*. (*Maxwell.*)

CRYPTOLECHIA ARVALIS, MEYR. (*ante*, page 109.)

Bred from larva found between spun leaves of *Careya arborea*. The larva has the head and prothoracic shield black and shiny, the body green, long and tapering, with a few bristles, subdorsal and spiracular lines fuscous, former rather faint, latter strongly marked in the middle of each segment and heavily marked towards the head. Pupa between same spun leaves, attached by tail only. Imago very sluggish. (*Maxwell.*)

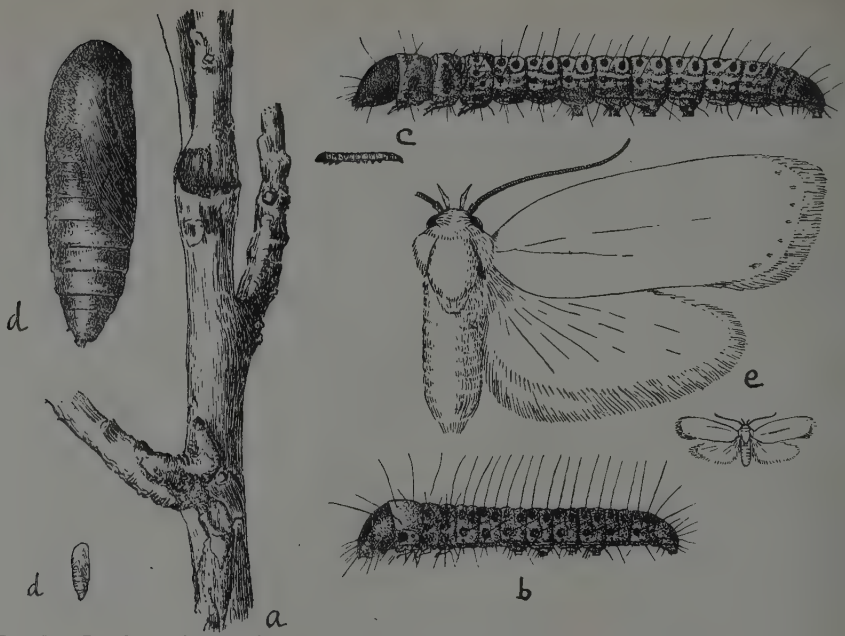


Fig. 1. *Ptochoryctis rosaria:*—
a, Apple-twig bored by larva, showing (below) tunnel covered with silken tube, and (above) silken tube removed, showing bark eaten away;
b, Larva, magnified (x 7) ;
c, Larva, full-grown, natural size and magnified (x 5) ;
d, Pupa, natural size and magnified (x 5) ;
e, Moth, natural size and magnified (x 5).

Fig. 2. *Orneodes magadis:*—*a*, Larva, lateral view (x 13) ; *b*, pupa, lateral

XYLORYCTIDÆ.

PTOCHORYCTIS ROSARIA, MEYR. (PLATE LXIII FIG. 1.)

Ptochoryctis rosaria, Meyr., B. J., XVII, 740 (1907)[1].

This insect, which has hitherto only been known from Bhutan[1], is a serious pest of apple at Shillong, the red larva eating into the bark of young twigs under cover of a silken gallery (Plate LXIII, fig. 1*a*). The angles formed between outgrowing twigs form a favourite place for attack by this larva, and considerable damage may be done by the stunting back of young growth. Larvæ were collected at Shillong in October 1919 and brought to Pusa, where no apple is available, and they were supplied with twigs of pear on which they fed up to the end of February 1920. One was found pupated on 5th March and emerged on 9th March.

The larva (Plate LXIII, figs. 1*b*, *c*) is about 12 mm. long and about 2 mm. broad across the head and thoracic region, cylindrical, tapering posteriorly very slightly and gradually, brick-red, with chequered whitish dorsal markings; head dark-brown or almost black, shiny; prothorax wholly covered by a brown, somewhat glossy plate; ninth and tenth abdominal segments darker, the latter with a large dark-brown somewhat glossy plate; tubercles dark-brown, shiny, with rather long white hairs; trapezoidal tubercles large and round, making the larva look spotted; spiracles small, rather oval, dark-brown, with a slit in the middle; legs black, shiny; five pairs of equally-developed rather short, pale yellow prolegs.

Pupation took place under webbed-up frass on a twig. In nature it probably occurs in the larval gallery. The pupa (Plate LXIII, fig. 1*d*) is about 9 mm. long and 2·5 mm. across the thoracic region, cylindrical, slightly and gradually tapering posteriorly, dark brown; anal segment blunt, with a pair of short spines on the dorsal surface and with a flattened wing-like projection on dorsal margin of anal extremity; anterior extremity of pupa rounded and with a roughened surface; the dorsal side of thoracic region and anterior part of abdominal area has also a roughened surface.

The moth (Plate LXIII, fig. 1*e*) is pure white, with a few antemarginal black dots on forewing. (Pusa Insectary Cage-slip 1988.)

STENOMIDÆ.

STENOMA ICHNÆA, MEYR. (*ante*, page 115.)

Bred in North Kanara in January 1912 and 1914 from larvæ found between spun leaves of *Symplocos spicata*, generally laying one leaf (alive or dead or

even fallen from another tree) on the face of another, back to face in natural position, very inconspicuous, the larva usually retiring into a cocoon-like cell spun between the two leaves with an admixture of excrement. The full-grown larva is about 14 mm. long, tapering in either direction, especially posteriorly, segments strongly marked, green tinged dorsally with reddish-fuscous, alimentary canal visible, darker green; head reddish-fuscous; prothoracic plate darker; a supra-spiracular series of black dots anteriorly on each segment, each dot emitting a longish pale bristle; a series of smaller black dots, each emitting a shorter pale bristle, situated posteriorly on each of the first four abdominal segments, on each of which segments there are thus two dots obliquely situated, the anterior dot being higher than the posterior; on last five abdominal segments traces of a third subdorsal row, more marked posteriorly, situated anteriorly on the segments; anal flap rounded, with black edges. Pupa dark, red brown, short and stout, attached by tail in the web between leaves, emitting a frequent sharp clicking sound when disturbed. The moth is very sluggish by day. Larvæ collected on 28th December 1911, emerged on 16th February 1912, and others collected at Christmas 1913, emerged on 17th January 1914. (*Maxwell.*)

ORNEODIDÆ.

ORNEODES MAGADIS, MEYR. (PLATE LXIII, FIG. 2.)

Orneodes magadis, Meyr., T.E.S. 1907, 510 (1908)([1]).

Originally described from Shillong([1]).

The larva (Plate LXIII, fig. 2*a*) feeds in Shillong within the flower-buds of *Colquhounia coccinea*, but is very difficult to find as a rule within the flower-buds. If the flowers are collected, however, the larvæ sometimes emerge to pupate externally and the moths may be bred fairly readily.

The full-grown larva is about 5 mm. long, rather flattened and decidedly stout for its length, dirty yellowish-white, sometimes suffused with pink over dorsal areas except head and prothorax; head pale-yellow or yellowish-brown, mouthparts reddish or reddish-brown, sharply divided; the abdominal segments each divided into a larger anterior and a smaller posterior subsegment and also with a sort of flange along the side above level of spiracles so that the dorsal portion stands out as a ridge; the dorsal vessels (? silk glands) show as a dark green through skin of thoracic and anterior abdominal segments; prothoracic shield not conspicuous; short white hairs (only notable through a lens) on body-segments. The larva drops by a thread when disturbed, when wandering externally.

Pupation takes place within a thin white silken cocoon which is normally spun amongst the flowers of the food-plant. Pupa pale yellowish-brown. (Plate LXIII, fig. 2*b*.) The moth (Plate LXIII, fig. 2*c*) may be beaten from bushes of *Colquhounia coccinea*.

HELIOZELIDÆ.

ANTISPILA ARISTARCHA, MEYR. (*ante*, page 119.)

Bred in August 1913, at Karwar, from larvæ found on *Vitis* sp. in numerous transparent blotches formed between both cuticles. Numerous larvæ were found in each leaf and the blotches were occasionally confluent. The excrement forms a wavy line in the deserted portion of the blotch. (*Maxwell.*)

ANTISPILA ANNA, MEYR. MS.

This species has been found at Serampore by Mrs. Annie Drake who, in her letter dated 24th November 1919, wrote :—" About the middle of July, I noticed a curious wee thing like a fragment of leaf on a leaf of *Eugenia jambolana*, and on holding it up to the light could see the movements of the larva inside it. After a little over a week the moth emerged. I only found two more cocoons at that time and they had evidently been parasitized, each having a minute round hole at one side whereas the one from which the moth came had the pupal shell protruding from the top of the cocoon..... Yesterday I found more of these interesting cocoons, five of them on leaves and three on the trunk of the tree." Some of these cocoons were sent to Pusa and from them we were able to rear out the moths. In sending a further consignment of cocoons, in her letter of 20th March 1920, Mrs. Drake wrote : " The moth appears to deposit its eggs singly at the apex of the leaves of *Eugenia jambolana*, Lam., and to select the leaves on the highest branches. On holding the leaf up to the light one can see the larva between the epidermal layers. It seems to confine itself to one side of the mid-rib and keeps to the upper end of the leaf. When ready to pupate it cuts the leaf through around itself and lowers itself by a silken thread and is borne hither and thither by the breeze till at last it alights on a leaf or a branch lower down in the tree to which it at once fastens its cocoon. The moth emerges about a week later in the day time. The pupa is protruded from the apex of the cocoon. Those that are parasitized have a minute hole in the side of the cocoon from which the Hymenopteron has emerged."

GLYPHIPTERYGIDÆ.

SIMAETHIS ORTHOGONA, MEYR. (*ante*, page 126.) (PLATE LXIV, FIG. 1.)

This has been reared again at Pusa from larvæ found on 21st August 1919, feeding on leaves and top-shoots of *sinhora* (*Streblus asper?*). The larva (Plate LXIV, fig. 1*a*) is very active, jumping at the least touch; it is about 10 mm. long and 1 mm. across the middle, tapering slightly posteriorly; general colour whitish-blue with numerous black spots: head rather flattened, yellowish-brown.

Pupation takes place in a double cocoon which is usually spun on a leaf, the outer cocoon being of thin texture whilst the inner one, in which the pupa rests, is stiff. Pupation occurs about two days after commencing to spin up and the moth emerges after another six days. The pupa (Plate LXIV, fig. 1*b*) is about 5·5 mm. long and 1·75 mm. across the thorax, brown-yellow. The moths (Plate LXIV, fig. 1*c*) from these larvæ emerged between 3rd and 6th September. (Pusa Insectary Cage-slip 1915.)

CHOREUTIS BJERKANDRELLA, THNB. (*ante*, page 128.) (PLATE LXIV, FIG. 2.)

This has also been reared at Pusa from larvæ found on 22nd October 1919, webbing the top-leaves of *mundi* (*Sphæranthus indicus*), living hidden inside the webbed-up leaves and nibbling their surfaces.

The full-grown larva (Plate LXIV, fig. 2*a*) was described as about 7 mm. long and slightly more than 1 mm. broad across the middle of the body which tapers slightly towards either end, skin glossy, soft and transparent, pale yellow, showing a slight green tinge when food is taken; head rather glossy; dorsal vessel faintly visible; short, yellow hairs arising from black points; spiracles small, round, with a brown rim; five pairs of equally-developed, slender, rod-like prolegs.

Pupation takes place on the plant in thin white silken cocoons formed amongst the leaves. The pupa (Plate LXIV, fig. 2*b*) is about 4·5 mm. long and 1·3 mm. across the thoracic region, yellow-brown; capital extremity blunt; anal extremity tapering; anal segment dorsally with an anteriorly-curved horn-like spine. When disturbed, the pupa does not wriggle but moves the anal extremity rapidly up and down. The pupal period is about five days. Moths (Plate LXIV, fig. 2*c*) emerged from these larvæ between 28th October and 19th November. (Pusa Insectary Cage-slip 1938.)

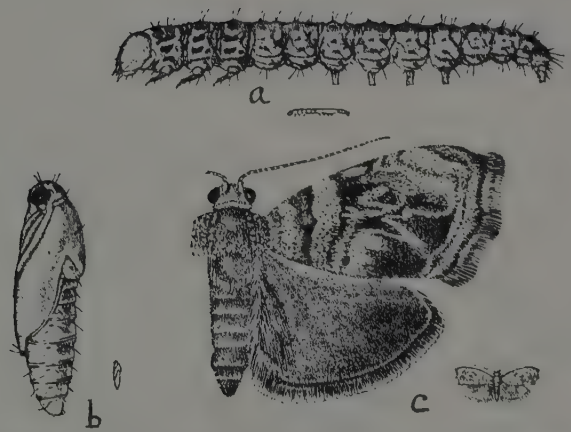


Fig. 1. *Simaethis orthogona*:—*a*, Larva ; *b*, pupa ; *c*, moth, natural sizes and magnified (x 7).

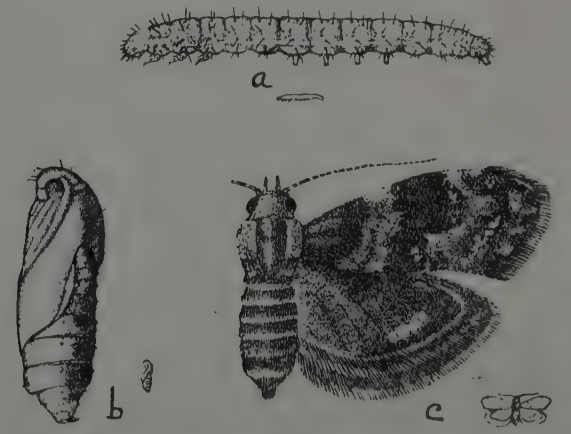


Fig. 2. *Choreutis bjerkandrella*:—*a*. Larva ; *b*, pupa ; *c*, moth ; natural sizes and magnified (x 8).

GRACILLARIADÆ.

LITHOCOLLETIS VIRGULATA, MEYR. (*ante*, page 138.)

Bred [at Karwar] in January and May 1916 from larvæ found in a more or less regular oval or roundish blotch, measuring about 15 by 10 mm., formed on the upper surface of a leaf of *Butea frondosa*. The cuticle over the blotch becomes tightly stretched and white, often puckering the leaf below it; a small discoloured oval patch is often visible on the white stretched cuticle, probably representing the early location of the larva. Pupation takes within the blotch and in the case of one specimen the pupa was observed to be tightly enclosed in a fine white spindle-shaped cocoon resting on the leaf-surface, but in other cases it seemed to be in a fine, light-spun web. The pupa is protruded on emergence, puncturing the cuticle of the blotch by means of a sharp diamond-shaped rostrum on its head; the position of the pupa on emergence is supine. One specimen was noticed to emerge at about 10 A.M. The moth sits with the head depressed, touching the resting surface, and the tail elevated; this was observed in every specimen bred. (*Maxwell.*)

Larvæ were collected at Pusa on 9th June 1919, mining blotches in the upper surface of leaves of *Pongamia glabra*. The mines were of various shapes and sizes, one being almost oval and measuring 10 by 9 mm., another being elongated and measuring 19 by 11 mm. Pupation took place inside the larval mines and the pupæ pierced through the membranous covering of the mine and wriggled out to some extent before emergence of the moths, the empty pupa-cases being left sticking out of the mines. Moths emerged on 16th June. (Pusa Insectary Cage-slip 1907.)

LITHOCOLLETIS INCURVATA, MEYR. (*ante*, page 141.)

Bred at Karwar in August 1913 from larva mining leaf of "*karvi*" (*Strobilanthes*), forming a small blotch filling the space between two veins of the leaf, apparently between the two cuticles. The blotch is dilated, concealing its inhabitant. Pupation takes place internally, at one end of the larval blotch. The imago rests with its head down and tail elevated. (*Maxwell.*)

ACROCERCOPS ORDINATELLA, MEYR. (*ante*, page 146.)

Bred in North Kanara in July and August 1913 from larvæ on *Alseodaphne semecarpifolia* and probably other species of Lauraceæ. The egg is almost invariably laid near the mid-rib of the leaf and the young larva proceeds by a fine gallery to the blotch which it inhabits for the rest of its life. The blotch is rather regular in shape, below the upper cuticle of the leaf which has a tightly stretched appearance, the excrement being gathered at the sides of the blotch.

Several blotches are found on one leaf and these are usually occupied singly but sometimes coalesce. The larva is cylindrical with the segments rather strongly marked, orange with a tinge of crimson, the alimentary canal visible, red. When disturbed in its blotch, the larva sometimes oscillates its head and anterior segments rapidly. The cocoon is orange-coloured and is occasionally formed within the blotch. The pupal period is six to eight days. The imago is very sluggish in the day time. (*Maxwell.*)

ACROCERCOPS PHÆOSPORA, MEYR. (*ante*, page 147.)

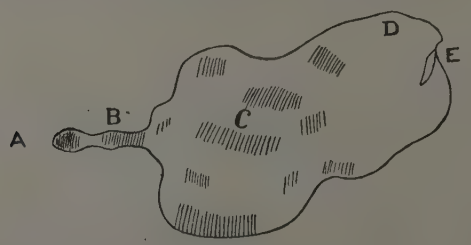
Bred in August 1914 and May 1916 at Belgaum from larvæ found in large elongate, opaque galleries in leaves of *Eugenia jambolana*, both sides of the leaves appearing swollen. The egg is laid at one side of the mid-rib on the under-surface of the leaf. The young larva mines in a single gallery along the mid-rib towards the base for about the length of the final blotch, then returns along the mid-rib for a short distance before striking across the leaf in a single gallery to the side of its blotch, and then proceeds back along the leaf parallel to the original gallery. The orange-coloured cocoon is found exposed. (*Maxwell.*)

ACROCERCOPS LYSIBATHRA, MEYR. (*ante*, page 152).

Bred [at Dharwar ?] between 31st December 1915, and 4th January 1916, from reddish larvæ mining a rather small irregular blotch on leaves of *Cordia*, the excrement following a line close to the margin of the blotch. The cocoon rather large, buff-coloured. (*Maxwell.*)

ACROCERCOPS USTULATELLA, STT. (*ante*, page 156).

Bred [? in North Kanara] from larvæ found in large numbers on leaves of *Diospyros embryopteris*, the larvæ occupying isolated blotches on both surfaces of the leaf, the blotches becoming confluent in some cases. The appearance of the blotch is shown in the text-figure, where A represents the discoloured



Larval mine of *Acrocercops ustulatella*.
(From a sketch by Mr. Maxwell.)

patch where the egg was laid, B the slender gallery, filled with the excrement of the young larva, leading to the main blotch, C the main blotch, irregular, balloon-shaped, with the larval excrement gathered in scattered heaps, D the remainder of the blotch, void of excrement, transparent, and E the larva feeding. (*Maxwell.*)

ACROCERCOPS BIFRENIS, MEYR. (*ante*, page 157.)

Bred at Khanapur, Belgaum, between 21st and 25th February 1915, from larvæ found very plentifully in leaves of more than one unidentified food-plant; one of these food-plants was described as having the leaves alternate, simple, smooth, acuminate, with opposite veins 4 to 6 or 8. The larval blotches were irregularly shaped, becoming confluent with other blotches in the same leaf, the whole of which is eventually left covered with the silvery cuticle only, the leaf underneath being discoloured with dry excrement, which is chiefly gathered around the edge of the blotches. Each blotch has an irregularly roundish tear in the cuticle covering it whilst still inhabited by the larva. The young larva is bright red, much tapering towards the tail; when full-fed it is bright crimson, cylindrical. The orange-coloured pupa is found in an orange cocoon formed on the surface of the leaf. The pupal period is about seven to eleven days in February. The imago quivers on its legs like *A. vanula*. (*Maxwell.*)

ACROCERCOPS CRYSTALLOPA, MEYR. (*ante*, page 157.)

Bred in July 1913 and also in 1915 at Karwar from larvæ found on *Memecylon edule* and *M. amplexicaule* in regular oval or sub-circular blister-like blotches formed under the upper cuticle of the leaf by continuously mining around the edge of the blotch. The larva has a very large dilated head, the body cylindrical with lateral prominences from which protrude single rather long hairs. The pupa is found inside the larval blotch and protrudes through the leaf-cuticle on emergence. The moth sits almost erect on its tail with the long antennæ held outwards and (relatively to the body) downwards, vibrating so rapidly as to be nearly invisible except towards the base. (*Maxwell.*)

ACROCERCOPS DIATONICA, MEYR. (*ante*, page 158.)

Bred in North Kanara from larvæ, sometimes found singly but often in numbers, under the upper cuticle of an unidentified herbaceous plant. The cuticle forms a tight blister over the whole surface of the leaf, and inside this blister the larva lives and feeds on the leaf which it ultimately clears, leaving only the tip and the cuticle. Pupation takes place in an oval cocoon which

turns yellowish after construction and which is formed under the blister, *i.e.* on the under-surface of the leaf-cuticle, but is apparently sometimes attached to the leaf also, especially to the mid-rib. (*Maxwell.*)

ACROCERCOPS EXTENUATA, MEYR. (*ante*, page 158.)

Bred at Karwar on 29th July 1913 from larvæ found on 16th July in blotches on underside of leaf of "*taosin*" creeper. The blotches were bounded by the main veins of the leaf, several larvæ being thus contained in one leaf in separate compartments. (*Maxwell.*)

ACROCERCOPS PHAROPEDA, MEYR. (*ante*, page 159.)

Bred at Karwar on 25th July 1913, from a larva in a rather small regular semi-transparent blotch resembling that of *A. ordinatella* except that the excrement is gathered in a heap in the middle of the blotch. The larva when disturbed oscillates anteriorly like that of *A. ordinatella*. Pupation took place on 16th July, in a brownish-yellow cocoon formed on the surface of the leaf. (*Maxwell.*)

ACROCERCOPS SCRIPTULATA, MEYR. (*ante*, page 159.)

Bred at Karwar on 28th July 1913 from cocoons found scattered about on the surfaces of a variety of leaves in the neighbourhood of *Terminalia paniculata*, which may be the food-plant. The cocoons, which are unusually large, irregularly elongate-oval, semi-transparent, white, were found at considerable distances from one another, indicating a wandering habit on the part of the larva prior to pupation. (*Maxwell.*)

ACROCERCOPS CIVICA, MEYR.

Acrocercops civica, Meyr., B. J., XXIII, 119 (1914)([1]).

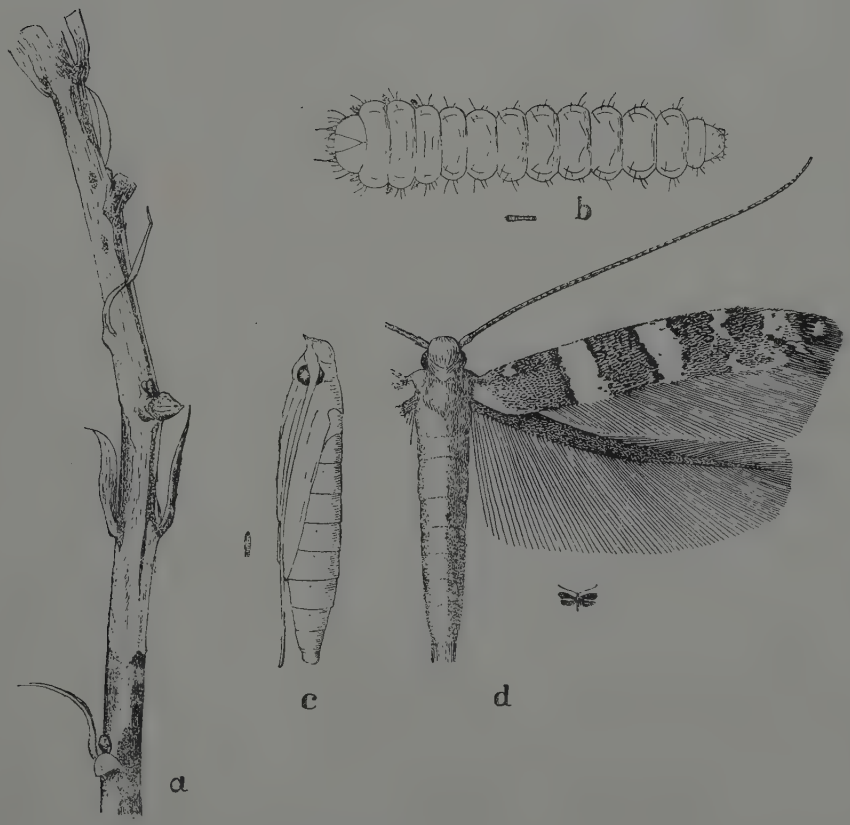
Described from Karwar([1]).

Bred in 1911 and in July 1913 [at Karwar] from pink or bright-red larvæ, mining blotches in leaf of cinnamon. Many larvæ were found in each leaf, apparently exceeding the capacity of the leaf for food. In another case larvæ were found in small, distinct, roundish blotches on both surfaces of the leaf, but especially on the upper side. The larval excrement is gathered into heaps in the middle of the blotches. The orange pupa is found in an orange-coloured or creamy cocoon. (*Maxwell.*)

ACROCERCOPS ZYGONOMA, MEYR. MS. (PLATE LXV.)

Acrocercops sp., Annual Rept. Impl. Entom. 1918-19, p. 87, t. 7 (1919)([1]).

The larva of this species was found at Pusa on 12th September 1918, mining under the epidermal layer of the bark of a young cotton plant.



Acrocercops zygonoma:—

a, Cotton branch attacked by larva; *b*, Larva, dorsal view, natural size and magnified;

c, Pupa, natural size and magnified; *d*, Moth, natural size and magnified.

Extensive mines are formed, covering the greater portion of the stem and some of the petioles of the leaves. As a result a thin somewhat transparent whitish paper-like membrane is formed, under the shelter of which the larva is visible. (Plate LXV, fig. *a*.)

The larva (Plate LXV, fig. *b*) is about 5 mm. long, rather flattened, about 0·7 mm. across the thoracic region, thence tapering slightly posteriorly, last two segments much narrower, segments clearly marked, uniform yellow; head flattened, smaller than prothorax into which it is partially retractile; legs and very short prolegs uniform yellow.

When full-fed the larva leaves its mine and forms a circular paper-like cover in a corner or depression on a stem or leaf and pupates in this cocoon, each larva forming a separate cocoon for itself. Moths (Plate LXV, fig. *d*) emerged on 20th and 21st September 1918. (Pusa Insectary Cage-slip 1852.)

ACROCERCOPS MALICOLA, MEYR. MS.

Bred at Shillong in June 1918 by Y. Ramachandra Rao from larvæ feeding on bark of apple.

EPERMENIADÆ.

EPIMARPTIS PHILOCOMA, MEYR. (*ante*, page 169.)

Bred [at Karwar ?] from larvæ found plentifully on leaves of *Butea frondosa* and *Xylia dolabriformis*. The larva is reddish-brown, prothoracic plate rather darker, the body-segments with dark spots, emitting hairs, each surrounded by a lighter ring. It leaves in a dirty-looking whitish and roundish web on the upper surface of the leaf. The web always adjoins a main vein and is kept off the surface of the leaf by five or six slender columns of excrement spun with silk, rendering the larva invisible. The excrement is also scattered on the outer surface of the web, giving it a rusty appearance, the rustiness being more marked in the case of webs formed on leaves of *Xylia dolabriformis*. Immediately opposite the upper web there is a similarly constructed web of much smaller size on the under-surface of the leaf, connected with the upper web by a small hole of escape through which the larva dodges with great agility when disturbed in either abode. Pupation takes place in a creamy spindle-shaped cocoon about 6 mm. long and pointed at both ends, often spun between two leaves, but sometimes exposed on leaf surface. In 1911 a specimen was bred from a cocoon which was separate, close to mid-rib, oval, resembling a birds-dropping. From larvæ which pupated in December 1915 the first moth emerged on 8th April 1916, one day after the first rain. The moth is very sluggish at night and appears to be diurnal. (*Maxwell.*)

LYONETIADÆ.

PHYLLOCNISTIS CHRYSOPHTHALMA, MEYR. (*ante*, page 171.)

Bred in July and August 1913, in North Kanara, from larva mining an elongate wandering blotch in the underside of a leaf of cinnamon, the course of the larva being marked by the excrement which forms a wavy, continuous, fine dark line. Pupation takes place inside the larval mine at the extremity of the blotch, the leaf being puckered here sharply. The pupal period is about eight days. (*Maxwell.*)

PHYLLOCNISTIS CIRRHOPHANES, MEYR. (*ante*, page 171.)

Bred in July 1913, in North Kanara, from larva found mining beneath upper cuticle of leaf of *Alseodaphne semecarpifolia*. The egg is laid near the edge of the leaf, from which the young larva proceeds at first in a spiral and afterwards in an undulating gallery, always confined to the extreme edge of the leaf, producing a blackish discoloration. When full-fed, the larva mines around the extreme edge of the leaf in a single gallery, finally pupating below the cuticle under a drawn-in edge of the leaf. The larva is flattened, shiny, tapering posteriorly, segments strongly marked, yellowish-green, last three segments more transparent; head small, black; prothoracic shield narrowed anteriorly, semi-transparent; first seven abdominal segments with a spiracular prominence ending in a bristle; anal claspers long, transparent, prostrate, divergent. The larva of this species is frequently noticed associated with that of *Acrocercops civica* in the same leaf, although the food-plant is common; in fact, the two are usually bred together. (*Maxwell.*)

PHYLLOCNISTIS CITRELLA, STT. (*ante*, page 171.)

Larva mining blotches in cinnamon and *Alseodaphne semecarpifolia*. When ready to pupate the larva works around in a gallery by the edge of the leaf and pupates internally under the turned-over edge. The larva is often found in conjunction with that of *Acrocercops civica*, sharing the same leaf. (*Maxwell.*)

The pupal cell is often found occupied by a Mite which apparently attacks and destroys the full-fed larva and newly-formed pupa.

PHYLLOCNISTIS HABROCHROA, MEYR. (*ante*, page 172.)

Bred in North Kanara in August 1913 and January 1915 from larva mining an irregularly wandering gallery in leaves of an unidentified plant locally called "*cheli*"; also found in a second unidentified leaf, which is

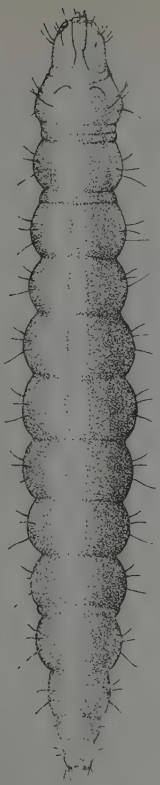


Fig. 1. Full-grown larva, dorsal view. (x 26).

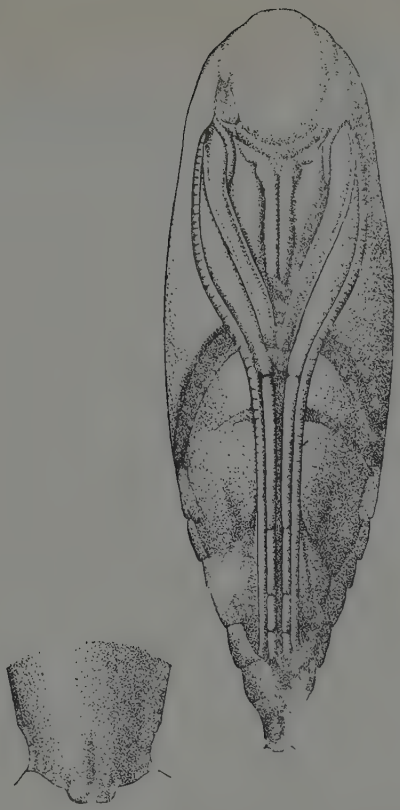


Fig. 2. Pupa of male (x 44) ; also more enlarged view of anal portion (x 133).

Fig. 3. *Crobylophora daricella.* Moth (x 30).

Leaves of *Plumbogo capensis* mined by larvæ of *Crobylophora daricella*. Cocoons are also seen on exterior of leaves. *Pusa, 3 July, 1919.*

glandular and has a red petiole and mid-rib. Pupation takes place in a cocoon connected with gallery and formed in a tightly puckered fold in the leaf or under a tightly bent-over edge of the leaf. (*Maxwell.*)

PHYLLOCNISTIS SYNGLYPTA, MEYR. (*ante*, page 173.)

Bred [at Dharwar] in January and August 1916 from regular *Phyllocnistis* type of galleries on upper surface of leaves of a small shrub, probably a species of *Capparis*, which was described as having leaves whorled with a pair of thorns in axils, thorns straight when young but recurved when older, stems and leaves pubescent, leaves bluntly ovate, margin entire, reticulately veined, pedicel $\frac{1}{4}$ inch long. The larva, which is light-green, can be seen distinctly at the end of its gallery, its course being shown by a thin dark line of excrement which runs down the middle of the gallery, leaving a white margin on either side. Pupation takes place within a folded-over edge of the leaf at the end of the gallery, the pupa being protruded on emergence of the moth. (*Maxwell.*)

PHYLLOCNISTIS HAGNOPA, MEYR. MS.

This species was reared at Coimbatore in July 1917 from larvæ mining in leaves of *Ailanthus excelsa*. The mine is figured in *South Indian Insects* (figure 338 ([1]) on page 462).

CROBYLOPHORA DARICELLA, MEYR. (*ante*, page 174.) (PLATES LXVI, LXVII.)

This species was found abundantly at Pusa in June, July and December 1919 by Mr. C. S. Misra, from whose notes the following account is taken. The egg is laid irregularly on the upper surface of the apex of a leaf of *Plumbago*, the largest number found on one leaf being ten. The egg is flattened, oval, dirty-white. The larva at first makes an elongate gallery which is afterwards developed into a rounded blotch, the frass being scattered irregularly within the mine. Several larvæ may mine in one leaf. The larva is about 3·5 mm. long, pale yellow, head rather elongated, pale-brown, body-segments broad, flattened, distinct. When full-fed it emerges from the mine and pupates on the surface of a leaf under cover of a silken cocoon, two cocoons being united together at times.

BUCCULATRIX UNIVOCA, MEYR. (PLATE LXVIII.)

Bucculatrix univoca, Meyr., Exot. Micr., II, 185 (1918)([1]).

Described from Pusa([1]).

This has been reared at Pusa from larvæ found on 14th October 1919, mining leaves of *kalmi* (*Ipomœa reptans*) (Plate LXVIII, fig. *a*). After some time, however, the larvæ emerged from their mines and formed a sort

of transparent flat yellowish silken cocoon-like covering on the surface of leaf or stem and rested in a coiled posture inside this cell (Plate LXVIII, fig. *b*) for about two days, after which they underwent a moult and emerged again. This resting stage larva (Plate LXVIII, fig. *c*) is about 4·25 mm. long and about 0·5 mm. broad, cylindrical, with distinct segments, uniform yellow, smooth, with five pairs of equally developed prolegs. After moulting on completion of the resting-stage, however, the appearance and colour are quite changed, nor does it mine the leaf any longer but feeds openly on the leaf, nibbling the tissue. At this stage the larva (Plate LXVIII, fig. *d*) has a pale yellow head which is smaller than the prothorax and partly retractile into it ; the general colour is light yellowish-brown, the dorso-lateral regions dark-grey ; on all segments the tubercles are rounded protuberances each surmounted by a short yellowish hair ; legs and five pairs of equally-developed prolegs pale yellow. In this stage the larva grows to its full length of about 6 mm., and when full-fed it forms anywhere on the leaf or stem an elongated brown longitudinally-ribbed cocoon (Plate LXVIII, figs. *e, f*) which is fixed to the resting surface throughout its length. Pupation takes place inside this cocoon, the pupa (Plate LXVIII, fig. *g*) being about 3·5 mm. long by 0·75 mm. broad across the thoracic region, yellowish-grey ; the head end with a short pointed process ; the spiracles slightly protuberant ; the anal extremity blunt, with a short outwardly-directed pointed lateral process on each side. The pupa wriggles out through one end of the cocoon before emergence of the moth (Plate LXVIII, fig. *h*), which takes place about twelve days after spinning up. From these larvæ, moths emerged between 28th October and 11th December. (Pusa Insectary Cage-slip 1952.)

OPOGONA XANTHOCRITA, MEYR.

Opogona xanthocrita, Meyr., B. J., XXI, 111 (Oct. 1911)[1].

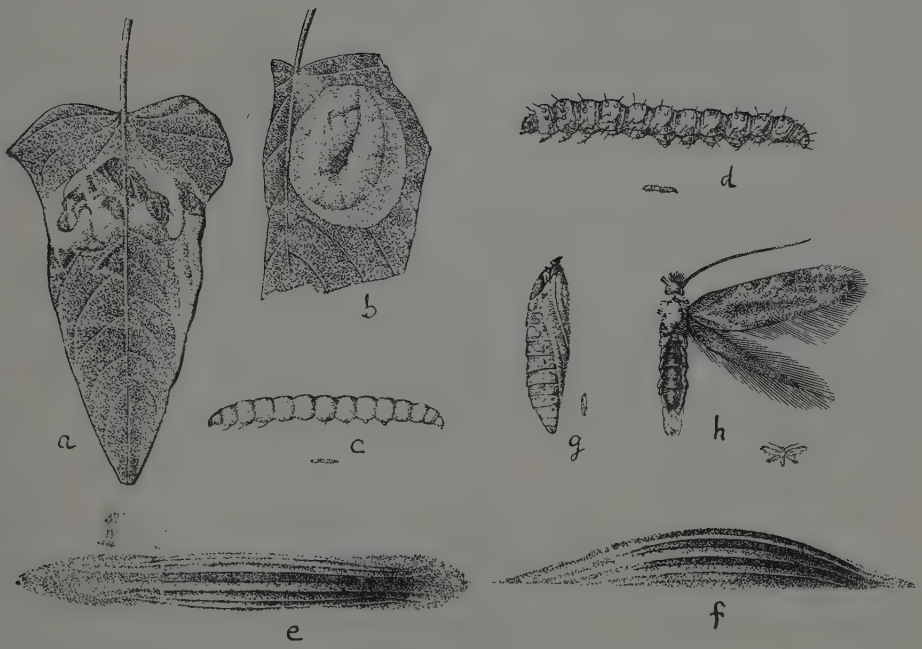
Described from the Nilgiris (3,500 feet) and North Coorg[1]. It has been reared in April 1918 by Mr. K. Kunhi Kannan from imported sugarcane in Mysore State. It has also been bred from dead wood by Mr. Beeson.

TISCHERIA HESTIAS, MEYR.

Tischeria hestias, Meyr., Exot. Micr., I, 354 (1915)[1].

Described from Karwar[1].

Bred [in North Kanara] in August 1913 from a larva mining squarish blotch occupying space between two veins of a leaf of " *Kewan* " (*Helicteres isora*), no excrement being visible in the mine. Pupation takes place within the blotch, the pupa being protruded on emergence of the moth. (*Maxwell.*)



Bucculatrix univoca:—

a, Leaf of Kalmi (*Ipomoea reptans*) mined by young larva ;
b, Young larva resting for moult in a silken covering after coming out of the mine;
c, Larva (*b*) shown separately, natural size and magnified (x 8) ;
d, Full-grown larva, natural size and magnified (x 8) ;
e, *f*, Cocoon. Dorsal (*e*) and side (*f*) views, magnified (x 8) ;
g. Pupa, natural size and magnified (x 8) ;
h. Moth. natural size and magnified (x 8).

TINEIDÆ.

ASYNDETAULA VAGULA, MEYR.

Asyndetaula vagula, Meyr., Exot. Micr., II, 262 (November 1919)([1]).

"Assam, Shillong, September (*Fletcher*). Taken flying commonly by day over a mossy bank, apparently attached to the moss, on which the larva probably feeds"([1]).

INCERTÆ SEDIS.

CRYPTOLOGA NYSTALEA.

Bred in September 1913 [at Karwar] from larvæ mining blotches beneath upper cuticle of leaf of "*Karanj*," giving the leaf a silvery appearance on the upperside. Pupa generally in turned-over edge of leaf, or puckering the leaf elsewhere. (*Maxwell.*)

This species is unknown to me and the names quoted by Mr. Maxwell are presumably manuscript ones given by Mr. Meyrick but as yet unpublished.

Note.—The following species, referred to in this Memoir under manuscript names, have recently been described by Mr. Meyrick in Part 11 of Volume II of *Exotic Microlepidoptera* (October 1920).

Page 33. *Meridarchis reprobata*, *Exot. Micr.*, II, p. 338.
,, 39. *Cacœcia pensilis* (*l.c.*, pp. 339-340) and *C. isocyrta* (*l.c.*, p. 34).
,, 44. *Acroclita vigescens*, *l.c.*, p. 343.
,, 50. *Eucosma conciliata*, *l.c.*, p. 345.
,, 53. *Polychrosis fetialis*, *l.c.*, p. 346.
,, 58. *Argyroploce cenchropis*, *l.c.*, p. 349.
,, 64. *Laspeyresia malesana*, *l.c.*, p. 352.
,, 197. *Cacœcia pomivora*, *l.c.*, pp. 340-341.
,, 199. *Peronea agrioma*, *l.c.*, p. 342.
,, 200. *Polychrosis acanthis*, *l c.*, p. 348.
,, 201. *Pammene quercivora*, *l.c.*, p. 351.
,, 201. *Laspeyresia perfricta*, *l.c.*, p. 352.

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